

REMARKS

Claim 1 has been amended to clarify the subject matter regarded as the invention. Claims 19 and 20 have been canceled. As a result, claims 1-18 are pending.

In an Office Action mailed on January 18, 2001 in the parent application of the present application, the Examiner rejected claims 1-17 under 35 U.S.C. § 112, second paragraph. Claim 1 has been amended to overcome this rejection.

The Examiner further rejected claims 1, 11, 12, 13, and 18 under 35 U.S.C. § 103(a) as being unpatentable over Andrews in view of Bell and Beeler, and claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Andrews in view of Bell, Beeler, and Brendel.

The rejection is respectfully traversed. With respect to claim 1, the redundant central controller is either idle or operating fully in parallel with the primary central controller, so there is no need for the redundant central controller to maintain the state of connections being handled by the primary central controller. Also, Andrews teaches a system for redundancy in the routing of telephone calls. As such, Andrews does not disclose any virtual machine or virtual IP address, as recited in claim 1. Bell also does not teach the maintaining of state and instead teaches an approach in which an operator must intervene manually to configure the backup system as the primary system in the event of failure, with the result that connections are broken and must be reestablished by the backup system once it has been manually reconfigured. Bell at col. 1, lines 60-66 and col. 2, line 47 – col. 3, line 3. Finally, the “replication packet” taught by Beeler (e.g., col. 13, lines 18-31) does not relate to maintaining the state of connections being maintained by an active connection manager, as recited in claim 1, but instead to a system of mirroring server or other computer content at a second computer that may have a dissimilar operating system. As

such, the replication packet taught by Beeler does not comprise “a foreign IP address, the virtual IP address and the physical IP address,” as recited in claim 1. As a result, claim 1 is believed to be allowable.

Claims 2-17 depend from claim 1 and are believed to be allowable for the same reasons described above.

In addition, claims 3-10 and 14-17 were indicated in the January 18, 2001 Office Action as containing allowable subject matter, and are believed to be allowable for this reason as well.

Similar to claim 1, claim 18 recites “a virtual machine object that stores a virtual IP address of a virtual machine that is implemented on the active connection manager” and “a replication packet from the active connection manager wherein the replication packet includes a foreign IP address, the virtual IP address and the physical IP address.” As a result, claim 18 is believed to be allowable for the same reasons described above.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

AMENDMENTS TO THE SPECIFICATION

At page 1, beginning at line 17:

This application is related to co-pending U.S. Patent Application No. 09/107,244 [____], LOAD BALANCING BASED ON CLIENT IP ADDRESS, by Richard A. Howes, et al. [(Attorney Docket No. CISC039)] and U.S. Patent Application No. 09/107,238, [____], (Attorney Docket No. CISC040)] both filed June 30, 1998 [concurrently herewith], which [is] are incorporated herein by reference for all purposes.

At page 2, beginning at line 13:

A Local Director connection manager that manages connections from remote clients to a local group of web servers is described in U.S. Patent Applications Nos. 08/850,248 [(Attorney Docket No. CISC005)]; 08/850,730 [(Attorney Docket No. CISC007)]; 08/850,836 [(Attorney Docket No. CISC008)]; 08/918,024 [(Attorney Docket No. CISC011)]; and 08/920,211, [(Attorney Docket No. CISC013)] which were previously incorporated by reference for all purposes.

At page 4, beginning at line 1:

Because the Local Director often functions as a single connection point or gateway to a group of servers that function as web servers that implement a large number of virtual servers having virtual IP addresses, the Local Director is potentially a single point of failure that could completely knock out all of the websites corresponding to virtual IP addresses served by the

Local Director. Since this is undesirable, it is important that a standby or backup Local director be provided to handle connections when the primary or active Local Director fails. A method for detecting failure of a Local Director and activating a backup Local Director to handle connections is described in U.S. Patent Application No. 08/918,024, [(Attorney Docket No. CISC011)] which was previously incorporated by reference. Two IP addresses, an active IP address and a failover IP address, are provided. When failure of the active Local Director is detected by a standby Local Director, then the standby Local Director assumes the active IP address and begins handling connections.

At page 11, beginning at line 6:

Thus, the Local Director uses a group of physical to implement virtual machines that appear to the outside world to be handling connections. In addition, special instances of virtual machines having the same IP address may be defined that handle connections from certain source IP addresses and are bound to certain physical machines designated to handle those connections. Physical machine 112B is bound to a special instance of the virtual machine that corresponds to IP address X.X.X.1. The special instance of X.X.X.1 has a Bind ID of 0 and is denoted X.X.X.1:0. Similarly, physical machine 112D is bound to a special instance of the virtual machine with IP address X.X.X.1 that has a Bind ID of 1. This is denoted X.X.X.1:1. Also, physical machine 112E is bound to an instance of the virtual machine with a Bind ID of 2, denoted by X.X.X.1:2. Physical machine [122A] 112A has a port which is bound to X.X.X.1:1 and physical machine 112C has a port which is bound to X.X.X.1:0. The physical machines may also have other ports which are bound to other virtual IP addresses, as is shown.

AMENDMENTS TO THE CLAIMS

1. (Amended) A method of maintaining the state of a virtual connection supported by an active connection manager on a standby connection manager comprising:

configuring the standby connection manager to include a physical machine object that stores a physical IP address of a physical machine that is available to the active connection manager and a virtual machine object that stores a virtual IP address of a virtual machine that is implemented on the active connection manager;

receiving a replication packet at the standby connection manager from the active connection manager wherein the replication packet includes a foreign IP address, the virtual IP address and the physical IP address; and

storing a standby connection object in the standby connection manager that includes the foreign IP address, the virtual IP address and the physical IP address from the replication packet [on the standby connection manager].

Reconsideration of the application and allowance of all claims are respectfully requested based on the preceding remarks. If at any time the Examiner believes that an interview would be helpful, please contact the undersigned.

Respectfully submitted,



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